IN THE CLAIMS:

1. (ORIGINAL) A method for use by an intermediate network device having a plurality of interfaces for forwarding network packets among the interfaces, one or more of the interfaces being associated with one or more Virtual Local Area Network (VLAN) designations, the method comprising the steps of:

mapping each VLAN designation to a site identifier;

receiving on an inbound interface a packet having a site-local unicast destination address;

identifying the VLAN designation associated with the received packet;

utilizing the identified VLAN designation to retrieve the site identifier to which the VLAN designation is mapped;

creating a modified destination address by embedding the retrieved site identifier into the site-local unicast destination address; and

rendering a forwarding decision for the received packet based on the modified destination address.

2. (PREVIOUSLY PRESENTED) The method of claim 1 wherein the received packet complies with version 6 of the Internet Protocol (IPv6).

3. (ORIGINAL) The method of claim 1 wherein the step of rendering a forwarding decision comprises the step of deciding upon an outbound interface from which the packet is to be forwarded.

4. (ORIGINAL) The method of claim 3 wherein the packet further includes a site-local unicast source address, the method further comprising the steps of:

identifying the VLAN designation associated with the outbound interface from which the packet is to be forwarded or the VLAN designation with which the packet is to be tagged;

utilizing the identified VLAN designation for the outbound interface to retrieve the site identifier to which the VLAN designation is mapped; and

comparing the site identifier associated with the inbound interface with the site identifier associated with the outbound interface.

5. (ORIGINAL) The method of claim 4 further comprising the steps of:

if, as a result of the comparing step, the two site identifiers match, forwarding the packet on the outbound interface; and

if, as a result of the comparing step, the two site identifiers do not match, dropping the packet without forwarding.

6. (ORIGINAL) The method of claim 1 wherein the step of rendering comprises the step of applying the modified destination address to a forwarding information base (FIB) optimized to permit fast lookups.

7. (ORIGINAL) The method of claim 6 wherein the FIB includes one or more content addressable memories (CAMs) and/or ternary content addressable memories (TCAMs).

8. (ORIGINAL) The method of claim 7 wherein the one or more CAMs and/or TCAMs stores addresses or address prefixes that have been modified to include site identifiers embedded therein.

9. (ORIGINAL) The method of claim 8 wherein at least one of the CAMs and/or TCAMs has a plurality of rows and each row of the CAM and/or TCAM stores a respective address or address prefix.

10. (PREVIOUSLY PRESENTED) The method of claim 1 wherein

the received packet complies with version 6 of the Internet Protocol (IPv6),

the site-local unicast address has one or more areas set to null, and

the site identifier is embedded at a selected null area of the address.

11. (ORIGINAL) The method of claim 1 whereby each VLAN designation is mapped to a single site identifier.

12. (ORIGINAL) The method of claim 11 whereby a plurality of VLAN designations are mapped to the same site identifier.

13. (ORIGINAL) The method of claim 1 wherein

packets may be one of either untagged or tagged with a VLAN designation, and

the step of identifying includes either, if the received packet is untagged, determining the VLAN designation of the inbound interface on which the untagged packet was received or, if the received packet is tagged, determining the VLAN designation with which the received packet is tagged.

14. (ORIGINAL) A method for use by an intermediate network device having a plurality of interfaces for forwarding network packets among the interfaces, one or more of the interfaces being associated with one or more Virtual Local Area Network (VLAN) designations, the method comprising the steps of:

mapping each VLAN designation to a site identifier;

receiving on an inbound interface a packet having a site-local unicast destination address;

identifying the VLAN designation associated with the received packet; and

utilizing the identified VLAN designation to retrieve the site identifier to which the VLAN designation is mapped.

15. (ORIGINAL) The method of claim 14 wherein the packet further includes a site-local unicast source address, the method further comprising the steps of:

identifying the VLAN designation associated with the outbound interface from which the packet is to be forwarded or the VLAN designation with which the packet is to be tagged;

utilizing the identified VLAN designation for the outbound interface to retrieve the site identifier to which the VLAN designation is mapped; and

comparing the site identifier associated with the inbound interface with the site identifier associated with the outbound interface.

16. (ORIGINAL) The method of claim 15 further comprising the steps of:

if, as a result of the comparing step, the two site identifiers match, forwarding the packet on the outbound interface; and

if, as a result of the comparing step, the two site identifiers do not match, dropping the packet without forwarding.

17. (ORIGINAL) An intermediate network device for forwarding packets within a computer network, the device comprising:

a plurality of interfaces for receiving and forwarding packets, one or more of the interfaces associated with one or more virtual local area network (VLAN) designations;

a forwarding information base (FIB) for storing routing information;

a routing engine in communicating relationship with the FIB, the routing engine configured to make forwarding decisions for received packets, based at least in part on the routing information in the FIB; and

a memory in communicating relationship with the routing engine, the memory configured to store the VLAN designations associated with the device's interfaces in mapping relationship with one or more site identifiers,

wherein the routing engine utilizes the memory to ensure that a packet having a site-local unicast source and/or destination address is only forwarded between interfaces corresponding to the same site identifier.

18. (ORIGINAL) The intermediate network device of claim 17 wherein the FIB includes one or more content addressable memories (CAMs) and/or ternary content addressable memories (TCAMs) programmed with a plurality of addresses or address prefixes.

19. (ORIGINAL) The intermediate network device of claim 18 wherein at least one CAM and/or TCAM has a width that is equal to or greater than 128 bits.

20. (PREVIOUSLY PRESENTED) The intermediate network device of claim 17 wherein at least some of the packets forwarded by the device comply with version 6 of the Internet Protocol (IPv6).

21. (ORIGINAL) The intermediate network device of claim 20 wherein the routing engine:

identifies the VLAN designation associated with the received packet,

utilizes the identified VLAN designation to retrieve the site identifier to which the VLAN designation is mapped,

creates a modified destination address by embedding the retrieved site identifier into the site-local unicast destination address, and

renders a forwarding decision for the received packet based on the modified destination address.

22. (ORIGINAL) The intermediate network device of claim 21 wherein the routing engine prevents packets received on an inbound interface that corresponds to a first site identifier from being forwarded on an outbound interface that corresponds to a second site identifier.

23. (ORIGINAL) The intermediate network device of claim 17 wherein

the plurality of interfaces are located at one or more line cards disposed at the intermediate network device, and

each line card includes a corresponding FIB and routing engine for rending forwarding decisions.

24. (ORIGINAL) A method for use by an intermediate network device having a plurality of interfaces for forwarding network packets among the interfaces, one or more of the interfaces being associated with one or more Virtual Local Area Network (VLAN) designations, the method comprising the steps of:

receiving on an inbound interface a packet having a link-local unicast destination address;

identifying the VLAN designation associated with the received packet;

creating a modified destination address by embedding the identified VLAN designation into the link-local unicast destination address; and

rendering a forwarding decision for the received packet based on the modified destination address.

25. (PREVIOUSLY PRESENTED) The method of claim 24 wherein the received packet complies with version 6 of the Internet Protocol (IPv6).

26. (ORIGINAL) The method of claim 25 wherein the step of rendering a forwarding decision comprises the step of deciding upon an outbound interface from which the packet is to be forwarded.

27. (ORIGINAL) The method of claim 26 wherein the packet further includes a link-local unicast source address, the method further comprising the steps of:

identifying the VLAN designation associated with the outbound interface from which the packet is to be forwarded; and

comparing the VLAN designation associated with the inbound interface with the VLAN designation associated with the outbound interface.

28. (ORIGINAL) The method of claim 27 further comprising the steps of:

if, as a result of the comparing step, the two VLAN designations match, forwarding the packet; and

if, as a result of the comparing step, the two VLAN designations do not match, dropping the packet without forwarding.

29. (ORIGINAL) The method of claim 24 wherein

packets may be one of either untagged or tagged with a VLAN designation, and

the step of identifying includes either, if the received packet is untagged, determining the VLAN designation of the inbound interface on which the untagged packet was received or, if the received packet is tagged, determining the VLAN designation with which the received packet is tagged.

30. (PREVIOUSLY PRESENTED) An intermediate network device for forwarding packets within a computer network, the intermediate device comprising:

means for mapping one or more VLAN designations to a site identifier;

means for receiving a packet having a site-local unicast destination address;

means for identifying a particular VLAN designation associated with the received packet;

means for retrieving the site identifier to which the particular VLAN designation is mapped;

means for creating a modified destination address by embedding the retrieved site identifier into the site-local unicast destination address; and

means for rendering a forwarding decision for the received packet based on the modified destination address.

31. (PREVIOUSLY PRESENTED) The intermediate network device of claim 30 wherein the packet complies with version 6 of the Internet Protocol (IPv6).

32. (PREVIOUSLY PRESENTED) A computer readable medium containing executable program instructions for forwarding packets within a computer network, the executable program instructions comprising program instructions configured to:

map one or more VLAN designations to a site identifier;

identify a particular VLAN designation associated with a received packet that has a site-local unicast destination address;

retrieve the site identifier to which the particular VLAN designation is mapped;

create a modified destination address by embedding the retrieved site identifier into the site-local unicast destination address; and

render a forwarding decision for the received packet based on the modified destination address.